



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/727,098	11/29/2000	Neil Alasdair James Jarvis	CISCP670	6808
26541	7590	03/25/2004	EXAMINER	
RITTER, LANG & KAPLAN 12930 SARATOGA AE. SUITE D1 SARATOGA, CA 95070			NGUYEN, ALAN V	
			ART UNIT	PAPER NUMBER
			2662	9

DATE MAILED: 03/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/727,098

Applicant(s)

JARVIS, NEIL ALASDAIR JAMES

Examiner

Alan Nguyen

Art Unit

2662

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) 10-21, 25, 31 and 32 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 22-24 and 26-30 is/are rejected.
- 7) ☒ Claim(s) 9 is/are objected to.
- 8) ☒ Claim(s) 1-32 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 November 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

On page 12, line 3, "directly accordingly" should read – directed accordingly --.

Appropriate correction is required.

Election/Restrictions

2. Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-9, 22-24, and 26-30 are drawn to the configuration of a network to perform load balancing, classified in class 370, subclass 255.

- II. Claims 10-21, 25, 31, and 32 are drawn to router address assignment, classified in class 370, subclass 475.

3. Inventions I and II are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention I has separate utility such as the steps in load balancing packet at a router, whereas in invention II, the claimed invention is directed to assigning an address to a router. See MPEP § 806.05(d).

4. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

5. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.
6. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.
7. During a telephone conversation with Attorney Dan Lang on 03/17/04 a provisional election was made without traverse to prosecute the invention of group I, claims 1-9, 22-24, and 26-30. Affirmation of this election must be made by applicant in replying to this Office action. Claims 10-21, 25, 31, and 32 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.
8. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and the fee required under 37 CFR 1.17(i).

Claim Objections

9. Claim 3 is objected to because of the following informalities:

Claim 3 recites the limitation "the one of the multiple parameters" in line 22. There is insufficient antecedent basis for this limitation in the claim

Appropriate correction is required.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

11. Claims 1-4, 22, 23, 26-28 are rejected under 35 U.S.C. 102(e) as being anticipated by Bare (US 6,621,810).

Regarding **claims 1, 26, and 27** Bare discloses a method, system, and computer medium for operating a selected router of a network, the router performing per session load balancing, the method comprising (**column 9, line 45-50 discloses protocol enables load balancing communication traffic over multiple active switches in a network**):

configuring a load balancing algorithm to reduce correlation of distribution of sessions among the active paths at the selected router relative to distributions of sessions of load balancing algorithms at other routers of said network (**column 9, lines 57-61 discloses a goal of the embodiment is to distribute packet loads fairly across all load balancing switch paths. Column 34, lines 64-67 and column 35,**

lines 1-15 discloses if some ports were given more than their fair share of load, a self correcting algorithm is utilized); and

assigning packets arriving at said selected router to a path according to said load balancing algorithm (***column 13, lines 17-35 discloses transmit load balance protocol packets to selected ports in the switch and maintain tables which direct packets for particular destination addresses to a selected port***).

Regarding **claim 2** with the features of parent claim 1 addressed above Bare discloses where the load balancing algorithm has multiple parameters and wherein configuring the load balancing algorithm includes steps of: selecting a random value; and setting one of the multiple parameters of the load balancing algorithm to be the random value (***column 33, lines 62-67, and column 34, lines 1-39 discloses a port load factor method that changes the ports where packets are received. This is a parameter in the load balancing algorithm. The port load factor is a load factor for each port. In cases where the port load factor is undesirable, a method of assigning another port that is randomly chosen is used***).

Regarding **claims 3 and 4** with the features of parent claim 1 addressed above Bare discloses a method further including: monitoring the load balancing of packets for unacceptable performance; if there is unacceptable performance, reconfiguring the load balancing algorithm by setting the one of the multiple parameters to a different random and unique value (***column 34, lines 64-67 and column 35, lines 1-15 discloses if***

some ports were given more than their fair share of load, a self correcting algorithm is utilized. Column 35, lines 5-20 discloses that since the distribution of the addresses is determined by each individual switch, the exact mechanism chosen to distribute the addresses can be left up to each particular implementation).

Regarding **claims 22 and 23** Bare discloses a method for configuring a portion of a packet switched network to reduce load balancing polarization comprising:

setting at least one of a plurality of routers of a same model included in a portion of a network to have a different load balancing algorithm from a second one of the plurality of routers (***column 35, lines 5-20 discloses that since the distribution of the addresses is determined by each individual switch, the exact mechanism chosen to distribute the addresses can be left up to each particular implementation).***

Regarding **claim 28** with the features of parent claim 27 addressed above Bare discloses where the computer readable medium is a CD-ROM, floppy disk, tape, flash memory, system memory, hard drive, or data signal embodied in a carrier wave (***It is inherent that some sort of computer memory is utilized in the embodiment).***

12. Claims 5-7, 24, 29, and 30 are rejected under 35 U.S.C. 102(e) as being anticipated by Wong et al (US 6,363,077) hereinafter Wong.

Regarding **claims 5, 24, and 29** Wong discloses a method, system and computer medium of load balancing a packet at a router using per-session load balancing comprising:

receiving a packet at a router having an associated identifier (**column 5, lines 4-16 discloses that packets are received at a source device with a source port ID**);

obtaining a source address and a destination address of the packet (**column 5, lines 16-20 discloses receiving packet header information including a source and destination address**);

selecting an output path according to a load balancing algorithm that uses the associated identifier (**see column 6, lines 12-19**), the source address, and the destination address (**see column 6, lines 27-35**) as inputs (**Also see figure 1 and column 5, lines 15-20. Figure 1 shows a load balanced port mapping system 168 that receives the packets, where the source and destination address can be extracted from, and the source port ID of where the packets entered**);

sending the packet to an output interface associated with the selected output path (**column 5, lines 19-28**).

Regarding **claim 6** with the features of parent claim 5 addressed above, Wong discloses where a look-up table that is configured using the associated identifier is used in the step of selecting (**column 11, lines 10-25 discloses the use of a packet routing table 134 (figure 4A). In this case the look-up table is used on every**

switch, therefore the identifier of the switch is known. The address field corresponding to the packet received by that particular switching device is read).

Regarding **claim 7** with the features of parent claim 6 addressed above, Wong discloses where the look-up table is configured at a set-up time of the router (***column 11, lines 10-25 discloses the use of a packet routing table 134 (figure 4A) in each switch. The table would understandably be configured when the switch is set up).***

Regarding **claim 30** with the features of parent claim 29 addressed above Bare discloses where the computer readable medium is a CD-ROM, floppy disk, tape, flash memory, system memory, hard drive, or data signal embodied in a carrier wave (***It is inherent that some sort of computer memory is utilized in the embodiment).***

Claim Rejections - 35 USC § 103

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

14. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wong in view of Yu (US 6,363,077).

Regarding **claim 8** with the features of parent claim 6 addressed above Wong discloses a look-up table method where the look-up table (**column 11, lines 10-25 discloses the use of a packet routing table 134**)

Wong, however, fails to expressly disclose where the table uses is a randomized hash look-up table.

Yu discloses a load balancing scheme across servers in a computer network that utilizes a class-to-server assignment table. (**Column 8, lines 27-35, discloses the use of an assignment/hash table that assigns classes to servers. Column 10, lines 50-60, discloses that random class-to-server assignments can be used**).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Wong's apparatus to utilize a randomized hash look-up table, as taught by Yu. The motivation is the ability to improve load balancing of packets through routers in the case of load imbalance by using a different, or randomized value, as explained by Yu in column 6, lines 30-35 and column 10, lines 27-31.

Allowable Subject Matter

15. Claim 9 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Regarding **claim 9** the cited references taken individually or in combination fails to particularly disclose where the combination of a method where the randomized hash lookup table is configured by performing steps of:

creating an initial hash table having a plurality of rows; seeding a random number generator with the associated identifier; obtaining a next random number and another next random number from the random number generator; swapping a row associated with the next random number and a row associated with the another next random number; repeating the steps of obtaining and swapping a preset number of times.

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following patent is cited to show the state of the art with respect to the use of load balancing in packet networks

US Patent (6,628,655) to Fieschi et al

US Patent (6,493,341) to Datta et al

US Patent (6,697,333) to Bawa et a

US Patent (6,567,377) to Vepa et al

US Patent (6,650,621) to Maki-Kullas

US Patent (6,618,761) to Munger et al

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alan Nguyen whose telephone number is 703-305-0369.

The examiner can normally be reached on 9am-6pm ET

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on 703-305-4798. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9314.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AVN
March 16, 2004


RICKY NGO
PRIMARY EXAMINER